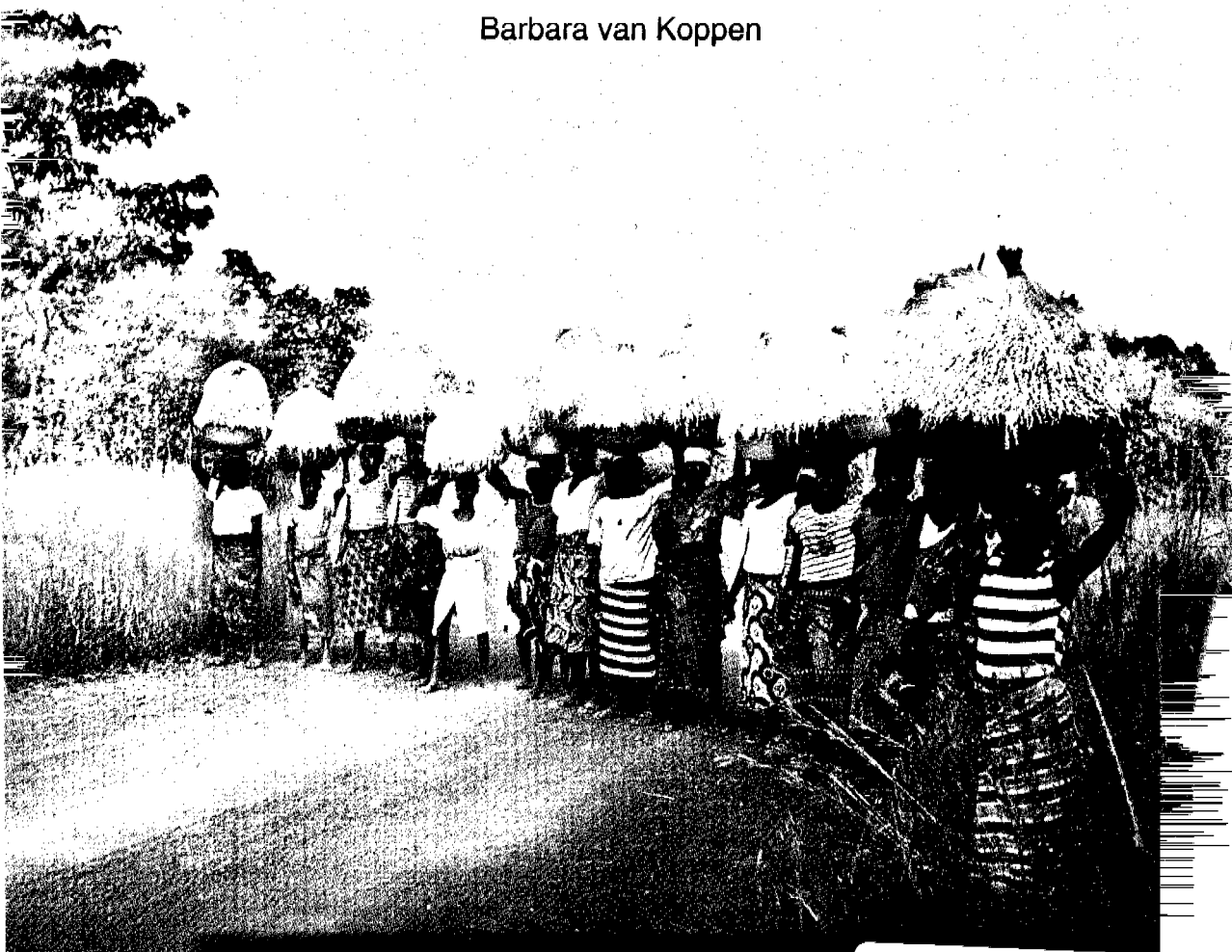


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More Crops and Jobs per Drop

*Managing Water for
Gendered Poverty Alleviation
and Agricultural Growth*

Barbara van Koppen



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Cover photograph by Barbara van Koppen: Women farmers carrying the harvest from their fields in Burkina Faso.

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Introduction

AIM AND STRUCTURE

Improving the well-being of poor women and men smallholders and increasing food production through water management under growing water scarcity conditions are major global concerns today. However, water and rural development professionals tend to see them as somehow separate issues. Thus, one potential strategy for water-induced agricultural growth remains largely unexplored: developing access to water for poor male and female smallholders as a way to improve water productivity *and* to better poor people's incomes. In this paper I examine supporting evidence, identify main issues, and assess the future potential of this win-win scenario of "more crops and jobs per drop."¹

In section 2, I discuss accumulating evidence of the synergy between water-induced agricultural growth and poverty alleviation and demonstrate why access to irrigation water is a critical factor in allowing agricultural intensification by the poor and improving their well-being. Sections 3 and 4 investigate the processes through which poor male and female smallholders obtain access to water. Section 3 analyzes how smallholders have obtained access to irrigation infrastructure, although they still occupy a disproportionately small part of the irrigated area in the world today. In section 4, I explore the differences in "access to infrastructure" between poor and non-poor farmers sharing a command area. This section also highlights the ways in which adverse terms of inclusion have especially affected women irrigators of all socioeconomic strata (Merrey and Baviskar 1998). Section 5 assesses the potentials and constraints for a strategy of "more crops and jobs per drop" in a future of growing water scarcity.

GENDER DIMENSIONS OF POVERTY AND PRODUCTION

Poverty and production are gendered, as most social phenomena are. I mention several aspects that will be relevant to appreciate the following sections. In all aspects of poverty, except life expectancy and perhaps food consumption (Jackson 1996), poor women are more disadvantaged than poor men. In Pakistan, Nepal, India, and Bangladesh even in the areas of life expectancy and food consumption women get the short end of the stick (Agarwal 1994).

¹During the IWMI Workshop "Women and Water" in September 1997, Ruth Meinzen-Dick introduced the expression "more jobs per drop" to refer to wage employment creation in irrigated agriculture. In this paper "jobs per drop" primarily refers to self-employment opportunities for poor irrigating smallholders.

The view that if you improve the incomes of men, the incomes of women will no longer be vital, fails to take into account several factors. In poor male-headed households, incomes of women are needed because those of men are too low to fulfill basic needs (Safilidou 1991). Incomes of men and women are used to satisfy different household needs (Fapohunda 1987). A larger proportion of incomes of women tends to be spent on family welfare, while a larger proportion of the incomes of men is spent on personal consumptive needs (cf. Von Braun et al. 1987; Agarwal 1994; Safilidou 1988). Also, the fact that women are the main or only providers in many poor households tends to be overlooked. Lastly, guaranteeing the economic security of women in old age removes a major micro-level cause of the current high fertility rates, with the result that population growth at the macro-scale will slow down at a faster rate (Safilidou 1991).

The role of women in agricultural production in general, and irrigated farming and field-level water application in particular, is becoming more appreciated (Safilidou 1988; Feldstein and Poats 1989; Agarwal 1986; Zwartveen 1995). However, an assumption that still hampers the recognition of women farmers is that, to be a real farmer, one must own land. The belief is that people who are unpropertied or who derive their land rights from customary tenure and marital contracts are not motivated to enhance productivity or invest in irrigation infrastructure. Many women are not the owners of the land they cultivate, so this stereotype contributes to continuing underestimation of the farming activities of women, and of male and female tenants as well.

Class is an important variable that influences patterns of the intra-household organization of production. Poor women tend to be even more strongly involved in and dependent upon agriculture than those who are better-off (Safilidou and Mahmud 1989; Agarwal 1986). Ethnicity, culture, and especially off-farm employment opportunities are other factors that influence the gendered organization of farming. Wherever the gender-segregated off-farm labor markets favor men, which is often the case, a feminization of smallholder agriculture is taking place. For example, farms managed by women constitute up to 90 percent of all farms in some districts in Kenya (Safilidou 1988).

Any strategy of poverty alleviation and production improvement should take into account that the incomes of women are and will continue to be vital for family welfare and that most poor smallholders are women.

Agricultural Growth through Poverty Alleviation

AGRICULTURAL GROWTH

There is substantive evidence that a synergy between poverty alleviation and agricultural growth exists. Studies that have assessed the influence of holding size on land productivity for a range of holdings that applied modern varieties, fertilizer, and irrigation clearly show that smallholdings are generally more productive. Recent research in Côte d'Ivoire and Latin America has also done much to debunk the myth that large farmers are more efficient than smaller ones (Adesina and Djato 1996; Sobhan 1993; Berry and Cline 1979). Data, especially from the green revolution areas in India, Bangladesh, Pakistan, the Philippines, and Sri Lanka, show that irrigated smallholdings, compared to irrigated large holdings, tend to:

- have higher net sown proportions of their irrigated land
- have higher cropping intensities
- apply more fertilizer per unit of cultivated land
- cultivate more diversified, higher-value, and more labor-intensive crops
- obtain higher yields per crop per unit of land
- have higher labor contributions by own family labor and also by hired labor, especially during peak periods when wage rates are high (cf. Berry and Cline 1979; cf. Hossain 1989; Boyce 1987; Mellor and Desai 1985; World Bank 1980; Jazairy, Alamgir, and Panuccio 1992).

A general inverse relationship between farm size and land productivity has existed throughout history, and is also valid if today's agricultural improvements are applied.

Sen (1962) concludes that the crucial explanatory factor for this inverse relationship is not the size of the holding as such, but the system of farming, i.e., whether it is wage-based or family-based. Family-based farming reduces supervision inefficiencies, while hiring and exchanging labor are on a more mutual basis. Hossain (1989) suggests that the need of poor families to meet the consumption requirements of all their members compels them to work at below-average wage rates. These basic needs also encourage the poor more strongly than those who are better-off to adopt the green revolution package, provided the poor have access to it. If they obtain access, smallholders make more productive use of the resources.

There are two exceptions to the general rule that land productivity is inversely related to farm size: first, if the larger holdings are more mechanized (Berry and Cline 1979) and, second, if the smallholders take up more lucrative, distant off-farm employment at the same time, and cultivate intermittently or lease their land (Castellanet 1992; Sobhan 1993). Employment outside agriculture is certainly a strong attraction, bringing masses of the poor to the townships and cities. Still, many poor men and women living in rural areas do not have this option and are therefore forced to depend upon agriculture. For them increased agricultural productivity remains a primary means to improve their well-being.

GENDER AND PRODUCTIVITY

The few studies that compare the productivity of irrigated plots under women's management to those under men's management indicate a higher land productivity for female-managed plots. In Burkina Faso's Dakiri scheme, when both men and women obtained irrigated rice plots, the plots of women had higher yields per unit of land than those of men. Women who had their own irrigated plots to work still contributed labor to their husbands' irrigated crops, more so than wives who did not have their own plots (Zwartevcen 1997). In Senegal, a higher density and a greater variety of crops were observed in irrigation schemes of women compared to those of men (Deuss 1994). These examples are in line with estimates that demonstrate female farmers are at least as efficient at management as male farmers, controlling levels of input and human capital (Quisumbing 1996; Udry et al. 1995; Adesina and Djato 1997).

The scope for enhancing women's productivity by providing better access to water and other productive assets is large. In one Kenyan case (Moock 1976) a simulation model predicted a 22 percent increase in women's yields on maize, bean, and cowpea plots if they were given the human capital and input levels of male farmers (Saito, Mekonnen, and Spurling 1994: all cited in Quisumbing 1996: 1587).

POLICY IMPLICATIONS

Many policy makers in the fields of agriculture, rural development, and poverty alleviation have demonstrated an awareness of the relationship between holding size and productivity. Their policies are to give large numbers of poor smallholders access to productive resources, production skills, and rewarding markets, in order to achieve both rural poverty alleviation and agricultural growth. This strategy is called "trickle up growth" (Jazairy, Alamgir, and Panuccio 1992), "poverty-reducing growth," or "broad-based growth" (World Bank 1990). The idea that land reform is an effective way of increasing agricultural productivity is also reflected in the mainstream policy (World Bank 1980; World Bank 1990; Jazairy, Alamgir, and Panuccio 1992). Hardly anybody would contest the validity of more equal land distribution as a strategy for agricultural growth and poverty alleviation. The fact that such land reforms are not implemented lies in politics and law, not in diagnostic doubts.

The implications for policy design in the water sector are potentially the same. Poverty alleviation strategies that support small farmers by providing them with access to irrigation and improved farming technology also have a positive impact on agricultural production. However, policy makers have given little thought as yet to the role of water in promoting poverty-reducing agricultural growth.

THE ROLE OF WATER IN POVERTY ALLEVIATION AND AGRICULTURAL GROWTH

Two key facts in the perpetuation of poverty, especially in South Asia and Africa, are that land distribution continues to be skewed in favor of the privileged and that the average size of landholdings continues to decrease. Given that these two facts are unlikely to change soon, water is an even more important means for both poverty alleviation and agricultural growth (Chambers, Saxena, and Shah 1989; Seckler and Deep 1982).

The high-yielding variety (HYV)-irrigation package enables poor smallholders to use their limited portions of land for a longer period of the year, and to achieve higher and more stable outputs of often higher-value crops. Intensification of agriculture through irrigation mitigates unequal access to land.²

Even a minimal portion of land that is irrigated “adds to the range of options” (Chambers, Saxena, and Shah 1989). Livelihood strategies of poor farmers, and of many wealthy farmers, are typically diversified. A stronger fallback position in one component strengthens one’s bargaining position in another, for example, in negotiating higher wages in part-time off-farm employment (Jazairy, Alamgir, and Panuccio 1992). Irrigation can serve as a stepping stone towards better alternatives.

As improved seeds and fertilizers become more widely available, access to irrigation will increasingly determine whether the full package of technologies is adopted. Improved access to water by the poor thus emerges as a critical factor for realizing the synergy between agricultural growth and poverty alleviation at a much wider scale than at present.

²Additional trickle-down benefits of irrigation are the new employment opportunities created through intensified agriculture, infrastructure construction and maintenance work, and the expenditure-induced growth linked to the introduction of irrigation (Hossain 1989; Jazairy, Alamgir, and Panuccio 1992; Bell, Hazel, and Slade 1982). These opportunities are not only open to smallholders, many of whom cultivate part-time, but also to landless men and women. In India, women wage laborers benefited considerably from the adoption of the HYV-irrigation package, because this increased the labor demand for sowing/transplanting, weeding, and harvesting, all traditionally women’s tasks. As a result, wage differentials between men and women at an all-India level slightly narrowed over the period mid-1960s till mid-1970s when the Green Revolution gained a foothold (Agarwal 1986).

Access to Infrastructure

A poverty-reducing path of agricultural growth is possible if male and female smallholders can improve their access to irrigation water. To develop effective policies to that end, insight is needed into the processes that determine whether poor smallholders get access to water and infrastructure, or not. In the following sections, I examine the processes that led to the current situation and the latest strategies to improve poor people's access to water. This section addresses the question why some farmers have gained access to infrastructure (the "haves") and others have not (the "have-nots"). Section 4 looks into class- and gender-based inequities among the "haves" who share the same scheme.

OWNERS OF INFRASTRUCTURE

One way poor smallholders have gained access to irrigation water is as owners of infrastructure—without strong direct interference by governments or NGOs during either the construction phase or the use phase. This infrastructure is often collectively owned, such as the centuries-old egalitarian community schemes in the Andean regions and the more hierarchical hill irrigation schemes in Nepal and tanks in India (Mosse 1997). Or it is individually owned, such as the recent treadle pumps that have quickly spread from Bangladesh to India and African countries (Shah 1997).

As private mechanized irrigation equipment usually requires a large up-front investment, even the smallest mechanized pump sets are often still too expensive for poor smallholders. Some NGOs, for example several in Bangladesh, successfully provide credit and further support so that male and female groups can become collective owners. Becoming a pump owner is attractive both for the purposes of irrigating one's own land and for selling water to others (Wood et al. 1990; van Koppen and Mahmud 1996).

Although some poor smallholders obtained collective access to mechanized private equipment, the non-poor dominated ownership of equipment. The equipment that is currently available on the markets is primarily designed for large-scale farming. It is only farmers living well above the poverty line who are able to invest in modern, capital-intensive equipment, like mechanized pumps, high-tech sprinklers, and drip irrigation. Unlike the poor, they have sufficient capital for investment, or have access to commercial and state banks.

Therefore, to promote smallholders' ownership of infrastructure, there is a strong need for the development of appropriate technologies that fit the scale of farming by the poor. Further, financing capacities will continue to determine who can own technology and who cannot, so loan facilities should be made available to the poor. Insurance arrangements could serve as safety nets (van Koppen and Mahmud 1996).

WATER BUYERS

Millions of poor smallholders have also obtained access to water as buyers on the modern water markets of South Asia. The water service level and costs are especially attractive for clients if the water sellers are numerous and the offer of water competitive (Shah 1993). In areas like the Bogra district in Bangladesh, for example, the water price expressed as a percentage of crop shares came down to 16 percent, from a usual 25 to 33 percent elsewhere in Bangladesh (van Koppen and Mahmud 1996). As lowering groundwater levels affects the overall amount available, water sellers are likely to regain the oligarchic position they enjoyed in the past.

BENEFICIARIES OF SUBSIDIZED IRRIGATION DEVELOPMENT

The massive expansion of subsidized irrigation development in the past three to four decades has benefited the poor, at least to some extent. In collective schemes—small-scale as well as large—that were subsidized and constructed by external support agencies, poor farmers benefited when sites included their land. They also benefited if land reform was implemented before construction to give landless and land-poor farmers a share in the newly developed lands (Chambers 1984).

A closer look at the processes of site selection and layout reveals whether there is a bias against the inclusion of poor people's land. Evidently, water availability and other physical factors strongly influence the site selection. In the very large-scale canal irrigation schemes technical and physical considerations predominated in the site selection. Here the new schemes favored smallholders proportionately to their share in the total area of agricultural land. However, the water service in these large schemes is notoriously low.

For smaller-scale schemes, a selective communication between supporting agency and local elites often fostered preferential construction on the sites of those with political influence. Sites for state deep tube wells (DTWs) in Bangladesh, for example, were mainly on larger farmers' lands and the sites were suboptimal to cover maximum command area (Murshid 1980). The local male elites had most contacts in the national political and development circles (Sobhan 1993) and they were the ones to negotiate with the state and NGOs on irrigation schemes. Therefore, irrigation development was strongest in the most influential, i.e., the wealthiest, regions. At the local level, the elites also played a dominant role in the interactions with engineers—informing them on the local geohydrological and topographical conditions and supporting them in implementing construction activities before the tight deadlines (van Koppen 1998). In these situations, the non-poor benefited more from irrigation development because they had more land per se and because their lands were served first.

The remedy for this problem of infrastructure access is to better target site selection for new construction and to involve the marginalized in this process (Zigterman 1996).

Land reform during the construction of new infrastructure has benefited poor people—mostly men. In Egypt, Tunisia, and Sri Lanka, for example, several large settlement schemes successfully recruited poor men as new landholders (Jazairy, Alamgir, and Panuccio 1992). A number of small-scale irrigation schemes, such as the Aandhi Khola scheme in Nepal and

several village schemes in Africa, were also accompanied by efforts to redistribute the newly developed land among more people, including the poorest (Castellanct 1992).

However, women were commonly excluded as title holders to newly developed land both in large settlement schemes like the Mwea scheme in Kenya (Hanger and Morris 1973) and in village schemes elsewhere. This even occurred in regions where women had strong independent rights to the land that the project came to develop, such as the rice valleys in West Africa (Dey 1980; Carney 1988). Only some of these projects later corrected their land allocation policies (van Koppen 1998). On the other hand, a response to criticism on women's exclusion as land title holders is the development of small-scale women's horticultural schemes. These have mushroomed since the late 1980s in countries like The Gambia (Carney 1994), Burkina Faso (Projet Sensibilisation 1995), and Kenya (Povel 1990).

CONCLUSION

Although many poor smallholder households have obtained access to infrastructure, they occupy a disproportionately small part of the irrigated areas. The skewed distribution of access to irrigated land leads to a skewed distribution of water for irrigation at basin level as well.

More smallholders can become owners of private equipment if appropriate technologies are developed and spread, and credit facilities are provided to buy them. The constraints for adoption that men face, and especially those that women encounter, need to be better understood to foster wide-scale adoption. The continuing construction of new schemes with agencies' support is also an important means to improve poor people's access to infrastructure, provided they are constructed on their land, or are accompanied by a land reform that allocates land to both men and women.

Intra-Scheme Inequities

Within collective use irrigation schemes the divisions of rights and obligations tend to be skewed along class- and gender-lines. This inequality not only reduces the net benefits of irrigated agriculture for the affected water users, but also reduces water productivity. Growing water scarcity will exacerbate these effects.

Private water markets are subject to inequities. The primary interest of the pump owners—to irrigate their own land—prevails over those of the water clients, whereas the clients bear a disproportionate share of the obligations through their water payments. Nevertheless, the sellers also do have an interest in serving their clients, and the clients do enjoy the advantage of not bearing investment costs and entrepreneurial risks, which in most cases they could not afford. The overall arrangement does benefit both parties (Shah 1993).

In many state- and NGO-supported schemes, rights and obligations are also inequitable but without serving clear general interests. Rights, such as independent water rights, membership in water users associations (WUAs), or access to credit, training, and marketing channels, are often vested in only a select number of the water users: typically male landowners. Large groups of poor water users without landownership rights have, at best, derivative water rights. Tenants obtain their rights through the landowners. Women are only allowed access to water as the wife, sister, or daughter of a man. Within the hierarchical relationships I am discussing here, derivative rights reinforce the dependency of poor tenants on landowners and of women on their male kin. The fact that water rights for the tenants and women are derivative often allows landowners and husbands to claim an even greater share of the irrigated output. Sometimes, the rights holders also charge their dependents with the burden of fulfilling the obligations related to the water rights. Typical obligations are paying water fees and providing labor and cash for maintenance work. Moreover, having secondary rights weakens one's negotiatory power during water distribution in the field. This leads to lower outputs, in spite of greater efforts.

Several strategies are currently applied to strengthen the position of poor and female water users and to improve the performance of the scheme. One strategy is to vest water rights or membership in WUAs in the male or female *users* of a certain irrigated portion of land rather than in the owners. A second successful strategy is to more directly link water rights to fulfilling the attendant obligations so that the person performing the actual work receives the benefits. A third and gender-specific strategy is to enable and encourage women to participate in formerly male-dominated WUAs. I am citing some illustrations below.

VESTING WATER RIGHTS IN LAND USERS

The Government of South Africa recently adopted a national water law that vests water rights in the persons who use the water productively on a certain portion of land, irrespective of the

land rights of that person (Republic of South African 1998). This law fosters the productive use of irrigation water rather than reinforces the power of landowners over water users. Further, disconnecting water rights from land titles allows greater legal clarity regarding water in regions where communal land tenure, which is poorly registered, prevails. This legislation certainly benefits women, who constitute the majority of the farmers.

As an element of its Irrigation Management Transfer policy, the Government of Andhra Pradesh, India, recognized tenants as members of the 10,262 new WUAs that were created in 1997. However, tenants still do not have voting rights. Women farmers working on lands that are owned by their in-laws are still formally excluded as members of these new WUAs (Government of Andhra Pradesh 1997).

Control over water is also increasingly disconnected from landownership at the small-scale implementation level. Support agencies such as the Aga Khan Rural Support Programme (India) in Gujarat have started to vest ownership of collective group wells in women. These tribal women are actively farming together with the men, in command areas situated near their homesteads.

LINKING OBLIGATIONS TO RIGHTS

The strategy of strengthening the link between obligations and rights is especially relevant to women. In numerous situations, rights related to the fulfillment of obligations, such as labor contributions to infrastructure construction or maintenance work, are counted in men's names, although, often women do much of the actual work. The Licto project in Ecuador took an alternative approach. About 80 percent of all construction activities were carried out by women in working groups (*mingas*), labor contributions were registered, and the new water certificates issued in the names of the investors, mainly women. Pregnant women also obtained water rights, but they were granted dispensation from carrying out construction work (Arroyo and Boelens 1997).

INCLUSION OF WOMEN IN WATER USER ASSOCIATIONS

Women's participation in WUAs is increasingly encouraged. Some governments, like those of Gujarat and Nepal, have developed policies and rules to ensure women's participation in the committees of the new WUAs created for Irrigation Management Transfer. Amidst a lot of tokenism, some women really change the beat of the drum. A new female member of the Board of Directors of the West Gandak Water Users Association in Nepal illustrates this. During the first General Assembly of the male farmer representatives of 174 tertiary units in the scheme, she emphasized to the participants that "now, men should accept leadership by women."

However, these and other South Asian formal endeavors to include women in WUAs have hardly addressed the fundamental issue of membership for the majority of women and poor tenants. Landownership remains a common criterion. The strongly criticized rule of one-member-per-household, supposedly the male head (Ilo et al. 1988; Meinzen-Dick and

Zwartveen 1998), also continues to discourage female membership in many WUAs. Whereas dual membership of both a man and a woman of the household has become widely accepted in other Natural Resource Management policies, it remains virtually unexplored as a formal policy in the irrigation sector.

Policies and practices to promote the gender-balanced organization of irrigators are, in general, much more advanced in Africa and Latin America. In the early 1990s, the Provincial Irrigation Unit in the Nyanza Province in Kenya, for example, explicitly included both men and women in its WUAs. The project required a minimum of 50 percent attendance by women at the preparatory meetings of new WUAs. Women were also organized into women-only groups and trained to articulate their interests and to participate effectively in these meetings, which were formerly dominated by men. Women's attendance at all meetings improved; their knowledge of project matters increased, and they participated more actively in water distribution and maintenance. The performance of women leaders was assessed to be similar to that of their male colleagues (Hulsebosch and Ombarra 1995).

CONCLUSION

All the above-mentioned examples highlight aspects of the broader question: how to design WUAs that will optimally serve the interests of all water users, irrespective of class and gender, and foster productive use of water? More specific questions are:

- Is direct interest in productive water use the most rational membership criterion?
- Is there more incentive to fulfill obligations if they are more directly linked to rights?
- Are women's needs, in fact, better addressed if there are more women committee members, or is it at least as important to create accountability devices through which women members, and other poor members as well, can direct their leaders without high transaction costs?
- What is the impact on water productivity if poor members' interests are better addressed?

Experiences worldwide need to be compared and evaluated to find robust answers to these questions (Shah 1996).

Gendered Poverty Alleviation and Agricultural Growth under Water Scarcity

As section 2 showed, access to water for poor women and men is a critical factor for realizing higher water productivity and poverty alleviation. The two previous sections dealt with access to infrastructure. Of course, access to infrastructure means nothing unless there are available water resources. The higher demand for this resource is leading to fierce competition, especially in closed basins—basins in which all available water is already committed (Seckler et al. 1998). In the case of closed basins water allocation is a zero-sum game.

The effects of the overuse of water sources on the poor are already visible in areas with lowering groundwater tables. Those with the more powerful and deeper-boring pumps continue to tap water, to the immediate detriment of users who cannot afford the equipment to dig as deeply. The latter, often the poor, are forced to take productive land out of cultivation due to lack of irrigation, and thus lose, what is for many, a critical source of income.

The scale of this problem will be amplified as more and more basins become closed and water demands grow. Highly productive land will be lost and poverty will be aggravated. Future chances to improve productivity will vanish not only for all poor smallholders, who could not afford to invest in infrastructure in the past because appropriate technologies and financing facilities were not available, but also for those who could not access previously subsidized irrigation development. If today's owners of the most powerful equipment remain the winners in this conflict, the consequences of sharing less water with more people will fall on the poor.

The context of growing water scarcity only underlines the importance of formulating society's ultimate goals for water management, designing strategies to achieve those goals, and implementing priorities in water allocation. The scenario described above of "more crops and jobs per drop" fits in this endeavor. I conclude by summarizing how.

Goals. Worldwide, poverty alleviation is a unanimously supported goal. In a world in which water is increasingly scarce, more productive use of this resource must be a major objective as well.

Strategy. Endowing poor women and men smallholders with access to water at a much larger scale than they have today, is a potentially effective strategy to achieve both increased productivity and poverty alleviation. The consistent evidence that the productivity of irrigated land in smallholdings is greater than in large holdings suggests that there is a well of productive potential here that has yet to be tapped.

There is also evidence that access to irrigation water leads to a tangible increase in the incomes of poor smallholders. A strategy of allocating water to a large number of poor women and men can thus have a huge impact on poverty alleviation. The same quantity of water will benefit more people, if it is allocated to many smallholdings rather than to a few large farms.

The majority of poor smallholders are women. Providing women with access to water increases their productivity and benefits the women themselves as well as their dependents.

Implementation. Endowing greater numbers of poor women and men smallholders with access to water and the means to use it productively can be achieved in the following ways:

- Smallholders can gain greater access to infrastructure through the development and spread of appropriate technologies and the provision of financing facilities. Furthermore, external agencies will contribute to improved access, if they construct new irrigation schemes on poor people's land and/or change land tenure in the newly developed area to include poor men and, especially, poor women.
- Within collective water use schemes, redressing inequalities in rights and obligations along gender and class lines optimizes the access to water and the benefits from irrigated agriculture for poor smallholders.
- In addition, access to HYVs, fertilizers, and to attractive markets is required to enable more productive use of water.
- Ultimately, the success of this strategy depends upon guaranteeing the rights of the poor to the nation's water resources now and in the future.

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